

Claims

1. Flexible traction element (38) which can be wound and unwound, in particular for passenger and/or goods lifts, which comprises at least one stranded cable (16) made of a material guaranteeing tensile strength, characterised in that the core strand (124) of each stranded cable (16) is sheathed by a flexible thermoplastic plastics material layer (126).
2. Traction element (38) according to claim 1, characterised in that the plastics material layer (126) extends at least partially into the cable grooves of the peripheral strand cords (128).
3. Traction element (38) according to claim 1 or 2, characterised in that it consists of a plurality of stranded cables (16) extending in parallel, which are embedded at a spacing (a) in a flexible thermoplastic plastics material jacket (39), preferably in a band or round form.
4. Traction element (38) according to claim 3, characterised in that the free surface of the stranded cables (16) is degreased or pretreated.
5. Traction element (38) according to any one of claims 1 to 4, characterised in that the stranded cables (16) consist of steel, aramid, glass, ceramic or carbon threads (130).
6. Production line (10) for embedding a plurality of stranded cables (16) in a flexible thermoplastic plastics material (39), which production line (10) comprises, in each case, a reel (14) for unwinding the stranded cables (16), a device (24) for the precise orientation of the stranded cables (16), a heater (26, 28, 30) for preheating the stranded cables (16), at least one extruder (32) for co-extrusion of the stranded cables (16) in a flexible plastics material

jacket, a cooling trough (42), a roller store (52), a cutting device (66) and a storage roller (18), characterised in that the extruder (32) has a thread guide (74) for the stranded cables and at least one matrix (76) which can be adjusted with and in relation to one another, individually, in a plane (P) angled with respect to the cable plane (E).

7. Production line (10) according to claim 6, characterised in that the stranded cables (16) are guided through a thread guide (74) and at least one matrix (75, 76), which can be adjusted in a range of (Δt) from ± 0.5 to 2 mm at a precision of preferably \pm at least 0.1 mm relative to one another, the planes (E, P) extending at an angle of 45 to 135°, preferably about 90°.
8. Production line (10) according to claim 6 or 7, characterised in that the stranded cables (16) run through a thread guide (74) and at least one matrix (75, 76), which can be positioned with adjusting screws (98, 100, 108).
9. Production line (10) according to any one of claims 6 to 8, characterised in that the stranded cables (16) pass through a thread guide (74) and at least one matrix (75, 76), which can be exchanged individually.
10. Production line (10) according to any one of claims 6 to 9, characterised in that the cable guide (74) and a matrix (75, 76), formed in two or more parts, of the extruder (32) have two or more separate feed systems (96, 120 and 120, 88), in particular for the liquefied plastics material (86).
11. Production line (10) according to any one of claims 6 to 10, characterised in that at least two removable parallel pressure rollers (40) for stranded cables (16) passing through in a plane (E) are arranged directly downstream from the extruder (32) and can be adjusted at right angles to the stranded cables (16), individually with respect to the spacing.

12. Production line (10) according to claim 11, characterised in that two or four pressure rollers (40) are configured, which form a gap which is adjustable with respect to the position and the spacing or which are arranged offset with respect to one another in the running direction (80) of the traction element (38).
13. Production line (10) according to any one of claims 6 to 12, characterised in that the matrix (76) of the extruder (32) has a cooling system.
14. Method for embedding at least one stranded cable (16) according to any one of claims 1 to 5, made of a material guaranteeing tensile strength, wherein the stranded cable(s) (16) are unwound, in each case, from a reel, oriented in the case of a plurality of stranded cables (16), sheathed with liquefied plastics material (86), guided through at least two pressure rollers (40), cooled, and after passing through a roller store (52) and a cutting unit (66) for cutting to length, wound onto a storage roller (18), characterised in that the unwound stranded cables (16) are degreased and/or pretreated to improve the adhesion of the plastics material jacket (39), preheated to a temperature of about $\pm 20^{\circ}\text{C}$ of the melting temperature of the flexible thermoplastic plastics material jacket sheathing the core strands (124) and sheathed in the extruder (32) with the liquefied plastics material (86).
15. Method according to claim 14, characterised in that the matrix (76) is heated or cooled less, preferably by 40 to 100°C compared to the thread guide (74).
16. Method according to claim 14 or 15, characterised in that the stranded cables (16) are guided at a running speed of 10 to 60 m/min through the extruder (32).

17. Method according to any one of claims 14 to 16, characterised in that an individually adjustable tensile force of 5 to 100 N, preferably 35 to 45 N, is maintained on each stranded cable (16).
18. Method according to any one of claims 14 to 17, characterised in that the position of stranded cables (16) running in parallel on a plane (E) in the extruded traction element (38) is adjusted, preferably automatically, with respect to the plane (E) by individually height-adjustable pressure rollers (40), directly adjoining the extruder (32).
19. Method according to any one of claims 14 to 18, characterised in that the extruded traction element (38) is guided through a cooling trough (42), also with a temperature gradient in the running direction (80).
20. Method according to any one of claims 14 to 19, characterised in that the pretreatment preceding the preheating takes place by means of a plasma treatment or application of an adhesive agent.
21. Method according to any one of claims 14 to 20, characterised in that the stranded cables (16) are preheated with an induction heater (26), a flame burner (28) and/or a warm air heater (30), to remove residual gases, or an infrared heater instead of the induction heater (26).